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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. |
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09/532,892 03/22/00 SASAKI

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EXAMINER

RECK II P

ART UNIT

PAPER NUMBER

2815
DATE MAILED:

11/01/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.

09/532,892

Applicant(s)

SASAKI, MAKOTO

Examiner

Paul E Brock II

Art Unit

2815

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) 8-14 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 March 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). ____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3. 6) ☐ Other:

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Group II in Paper No. 6 is acknowledged.
2. Claims 8 – 14 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected Group I, there being no allowable generic or linking claim. Election was made **without** traverse in Paper No. 6.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

4. Claims 1 – 6 are rejected under 35 U.S.C. 102(e) as being anticipated by Stamper (USPAT 6111301).

With regard to claim 1, Stamper discloses in figure 2 a semiconductor memory device. Stamper discloses in figure 2 a dielectric film (8). Stamper discloses in figure 2 first and second wiring lines (6) provided in the dielectric film. Stamper discloses in figure 2 a copper fuse (2) section provided in the dielectric film, and connected to the first and second wiring lines.

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Stamper discloses in figure 2, and column 1 lines 29 – 37 an opening formed to the copper fuse section through the dielectric film, wherein a laser beam is irradiated to the copper fuse section through the opening in an oxygen atmosphere.

With regard to claim 2, Stamper discloses in column 2, lines 60 – 61 wherein the dielectric film inherently has a thermal endurance of 350 °C or above. This is an inherent property of silicon dioxide.

With regard to claim 3, Stamper discloses in column 2, lines 60 – 61 wherein the dielectric film has a relative dielectric constant equal to or lower than 4. This is an inherent property of silicon dioxide.

With regard to claims 4 and 5, Stamper discloses in column 2, line 56 wherein at least one of the first and second wiring lines is formed of copper.

With regard to claim 6, Stamper discloses in figure 2 wherein the copper fuse section is connected to the first wiring line via a first conductive plug (4) and to the second wiring line via second conductive plug (4).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Stamper as applied to claim 1 above, and further in view of Huang et al. (USPAT 6162686, Huang).

Stamper discloses in figure 2 wherein the dielectric film includes a first dielectric film and a second dielectric film on the first dielectric film, the copper fuse section being formed on the first dielectric film. Stamper is silent on a third wiring line formed of copper on the first dielectric film. Huang discloses in figure 5 and column 6, lines 20 – 22 a semiconductor memory device that comprises a third wiring line (44(M2)) formed of copper on the first dielectric film (30). It would have been obvious to one of ordinary skill in the art at the time of the present invention to use the third wiring line formed of copper of Huang in the device of Stamper in order to connect devices together as stated by Huang in column 4, lines 25 – 35.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Shiratake et al., Tsai, Endo et al., Agarwala et al., Daubenspeck et al., Bezama et al. and Gilmour et al. all disclose fuse structures. Mostiff et al. discloses an oxidizable fuse structure of copper.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paul E Brock II whose telephone number is (703)308-6236. The examiner can normally be reached on 8:30 AM-5:30 PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie Lee can be reached on (703)308-1690. The fax phone numbers for the organization where this application or proceeding is assigned are (703)308-7722 for regular communications and (703)308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0956.

Paul E Brock II
October 30, 2001



EDDIE LEE
SUPERVISORY PATENT EXAMINER
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